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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,482	09/25/2001	Tatsuya Hojo	6790P359	4802

7590 09/22/2005

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EXAMINER	
CRAIG, DWIN M	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/857,482	HOJO ET AL.	
	Examiner	Art Unit	
	Dwin M Craig	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6-23-2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 11-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4* is/are rejected.

7)☒ Claim(s) *3, 5, 6, 7, 8, 9, 11, 12 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-9 and 11-13 have been presented for reconsideration based on Applicants' arguments and amended claim language. Claim 10 has been cancelled.

Response to Arguments

2. Applicants' arguments presented in the 6/23/2005 responses have been fully considered. The Examiner's response is as follows.

2.1 The Examiner thanks the Applicants' for changing the title of the Applicant.

2.2 Regarding the Applicants' response to the rejection of claims 1 and 4 with the *Kavaranoglu et al.* reference. The Examiner respectfully traverses Applicants' arguments. Applicant argued on page 10 of the 6/23/2005 responses that, *[claim 1 provides a means for changing from the control characteristic expression in the time response, which the technician of a process control system has become accustomed to and familiar with, to the frequency response system that the H infinity control theory deals with.]*, and then the Applicant discloses a recitation of the of the newly amended claim limitations. The Examiner notes that on page 63 of the *Kavaranoglu et al.* reference is disclosed that an FFT computational method is implemented using the algorithms discussed, this implies the use of computer system which inherently has a *"storage means"*. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., There is no technician in Applicants' claim language) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification

are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

2.3 Regarding the Applicants response to the rejections of claims 1, 2 and 4 using the *Whidborne et al.* reference, Applicants argued on page 11 of the 6-23-2005 responses, *[Fig. 9, of Whidborne, however merely provides a graphical user interface (GUI) for a user to define the weighting function. Therefore, way the weighting function is defined in Whidborne is completely different from Applicants' setting means for setting the transient response characteristic].* The Examiner respectfully traverses Applicants' arguments. The Examiner notes that *Whidborne et al.* discloses the use of a program MATLAB, which inherently has the means to calculate a matrix.

2.4 As regards Applicants response to the rejections of claims 1, 2 and 4 with the *Lunstrom et al.* reference, Applicants' argued on page 12 of the 6-23-2005 responses, [It is asserted in the Office Action that Lunstrom discloses a variable weight and a matrix (see Lunstrom, page 1537)...Therefore the weight and matrix disclosed by Lundstrom is completely different from the "frequency sensitivity weight calculation means" in amended claim 1, and the "scaling matrix calculation means" of amended claims 2 and 4.]. The Examiner respectfully traverses Applicants' arguments. The Examiner notes that the Applicants' have opined that there is a difference between the same words in the reference cited and the words in the current claim language, the Examiner is confused and does not see any difference between the cited reference and Applicants' amended claim language.

2.5 As regards Applicants' response to the rejections of claim 1 by the Hartly reference. Applicant argued on page 13 of the 6-23-2005 responses, [Hartly, however, does not teach,

disclose or suggest "setting means for setting a transient response characteristic of a closed system...*recitation of the rest of claim 1*]. The Examiner respectfully traverses Applicants' arguments. The Applicant has merely opined that the cited reference *Hartly* does not disclosed the expressly claimed limitations. The Examiner points to the rejection as cited as regard Applicants' limitations.

2.6 As regards Applicant's response to the rejections of claims 1, 2 and 4 with the Shah reference, Applicant argued, on page 14 of the 6-23-2005 responses, [Therefore, the weighting disclosed by Shah completely different from the "frequency sensitivity weight calculations means" in amended claim 1] and [Therefore the matrix disclosed in Shah is completely different from Applicants' scaling matrix calculation means" as claimed in claims 2 and 4]. The Examiner respectfully traverses Applicants' arguments. The Examiner stands by the rejection of claims 1, 2 and 4 as cited in this Office Action.

2.7 The Examiner upholds all of the 35 USC § 102 rejections of claims 1, 2 and 4.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Independent **Claim 1** and dependent **Claim 4** are rejected under 35 U.S.C. 103(b) as being anticipated by ""**New Identification based weighted H∞ norm approximation scheme**

and its applications to controller reduction" by D. Kavaranoglu, S. Al-Amer and M. Bettayeb, hereafter referred to as the *Kavaranoglu et al.* reference.

3.1 As regards independent **Claim 1** the *Kavaranoglu et al.* reference teaches an H-Infinity controller using logic employing generalized plants with response characteristics of a closed loop system **(page 61),** a calculation means for calculating the parameters in accordance with the response characteristics of a model **(page 62** *"To obtain the solution of the H∞ model reduction problem, the following algorithm, which is motivated from Lawson's algorithm was proposed in [25, 26] In the frequency-domain:"***),** and a storage means is inherent to the *Kavaranoglu et al.* reference because these method lend themselves to use on a digital computing system.

3.2 As regards dependent **Claim 4** the *Kavaranoglu et al.* reference teaches variable weight and a frequency response determining means **(pages 62 & 63).**

4. Independent **Claim 1** and dependent **Claims 2 and 4** are rejected under 35 U.S.C. 102(b) as being anticipated by **"A mixed optimization approach to multiobjective computer-aided control system design"** by J.F. Whidborne, I Postwait and D-W Gu, hereafter referred to as the *Whidbborne et al.* reference.

4.1 As regards independent **Claim 1** the *Whidborne et al.* reference teaches, a design device for designing a controller in accordance with the H infinity control logic **(Abstract page 309),** employing generalized plants having control object models for manipulation of variables **(figure 9 page 314),** storage means is inherent, **(**note the MATLAB program running on a computer **page 309),** parameter calculation means using an object model to determine the

response characteristics of a closed loop system **(Figure 5 page 313** box titled, "compute closed loop transfer functions"**),** and a controller calculation means for calculating parameters for the generalized plants in said storage means **(Figure 3 Page 312, Figure 7 page 314).**

4.2 As regards dependent **Claims 2 and 4** the *Whidborne et al.* reference teaches, variable weight adjusting means **(Figure 9 page 314),** frequency response calculation means **(Figure 4 page 313** *it is noted by the Examine that Figure 4 discloses bandwidth of the charted function, frequency bandwidth is a figure of merit when determining the frequency response of a given function***),** and a scaling matrix **(page 311).**

5. Independent **Claim 1** and dependent **Claims 2 and 4** are rejected under 35 U.S.C. 102(b) as being anticipated by **"Uncertainty Weight Selection for H-Infinity and Mu-Control Methods"** by P. Lunstrom, S. Skogestad and Z. Wang hereafter referred to as the *Lunstrom* reference.

5.1 As regards independent **Claim 1** the *Lunstrom et al.* reference teaches, a design device for designing a controller in accordance with the H infinity control logic **(Abstract page 1537),** employing generalized plants having control object models for manipulation of variables **(page 1538 section "Controller Designs"),** storage means is inherent **(page 1538** note the footnote at the bottom of the page describing MATLAB which is a computer program which stores data objects in memory, thus a storage means**),** parameter calculation means using an object model to determine the response characteristics of a closed loop system **(Figure 1 page 1537** it is noted by the Examiner that Figure 1 in the *Lunstrom et al.* reference is almost identical to Figure 7 in the Applicant's specification, as regards the frequency response characteristics see

Figure 5 page 1541), and a controller calculation means for calculating parameters for the generalized plants in said storage means **(page 1542 figures 7 & 8** inherently show the results of a parameter calculation means).

5.2 As regards dependent **Claims 2 and 4** the *Lunstrom et al.* reference discloses a variable weight and a matrix **(page 1537).**

6. Independent **Claim 1** is rejected under 35 U.S.C. 102(b) as being anticipated by **Hartly SIR number H1410.**

6.1 As regards independent **Claim 1** the *Hartly* reference teaches, a design device for designing a controller in accordance with the H infinity control logic **(Figure 1 Item 12),** employing generalized plants having control object models for manipulation of variables **(Figure 2),** storage means is inherent, **(Col. 2 lines 27-57** discloses the use of MATLAB**),** parameter calculation means using an object model to determine the response characteristics of a closed loop system **(Figure 3, Col. 3 Lines 50-53),** and a controller calculation means for calculating parameters for the generalized plants in said storage means **(Col. 4 lines 34-54).**

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Independent **Claim 1** and dependent **Claims 2 and 4** are rejected under 35 U.S.C. 102(a) as being anticipated by **Shah U.S. patent 6,230,062.**

7.1 As regards independent **Claim** 1 the Shah reference teaches, a design device for designing a controller in accordance with the H infinity control logic **(Figure 3B items 332 & 331),** employing generalized plants having control object models for manipulation of variables

(Figure 3C, Figure 6 "Parametric Adaptation"**),** a storage means **(Col. 6 Lines 24-40),** parameter calculation means using an object model to determine the response characteristics of a closed loop system **(Col. 6 Lines 13-23),** and a controller calculation means for calculating parameters for the generalized plants in said storage means **(Col. 9 Lines 32-40** note the term "computing resources" which is functionally equivalent to a "calculation means"**).**

7.2 As regards dependent **Claims 2 and 4,** the *Shah* reference teaches weighting **(Col. 11 Lines 45-55),** and a matrix **(Col. 11 Lines 20-45).**

Allowable Subject Matter

8. Dependent **Claims 3, 5, 6, 7, 8, 9, 11, 12, and 13** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Claims 1, 2 and 4 are rejected. Claims 3, 5, 6, 7, 8, 9, 11, 12, and 13 are objected to. Claims 10 is cancelled.

9.1 Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9.2 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwin M. Craig whose telephone number is (571) 272-3710. The examiner can normally be reached on 10:00 - 6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DMC

Paul L. Rodriguez 9/8/05
Primary Examiner
Art Unit 2125